

## How to manage a meadow for hay making and grazing pasture

Traditionally, wildflower grasslands were managed either for making hay with aftermath grazing or as pasture with low-level grazing throughout much of the year. Many types of grassland are now managed for the production of silage and this is one of the reasons for the decline in wildflower grasslands. The wildflowers, which are the fabric supporting much of our wildlife, can be sustained by managing the meadow for hay making or as pasture. Both types of management are very successful at maintaining and restoring species-rich grasslands. Without some form of management, wildflowers become swamped by grasses and are unable to survive.

### Management for Silage Production

Managing grassland for silage involves taking an early cut of grass in late May or early June, which is wrapped in plastic or stored in an agricultural clamp or bin to ferment. Another cut in July may also be taken and in good growing years a further cut may be possible. These fields are often fertilised and may have been over-sown with fast-growing plants like perennial rye-grass and white clover, making them more agriculturally productive than traditionally managed wildflower meadows and pasture. However, the early cut, addition of fertiliser and introduction of more competitive grasses and clovers all have a



negative effect on wildflowers. They are unable to bloom as their flowering season is much later than the first silage cut and the flower heads are severed. This reduces their ability to set seed and as time progresses, individual plants die and are not replaced. The agriculturally competitive grasses and clovers are able to take-up fertiliser more readily than the wildflowers and grasses and quickly out-grow and shade them. Also, the physiology of wildflowers means that they are not able to survive well in highly fertile environments. Wildflowers are unable to survive under this silage management and traditional methods are more suitable if you wish to maintain the plant diversity.

### Hay Meadow Management

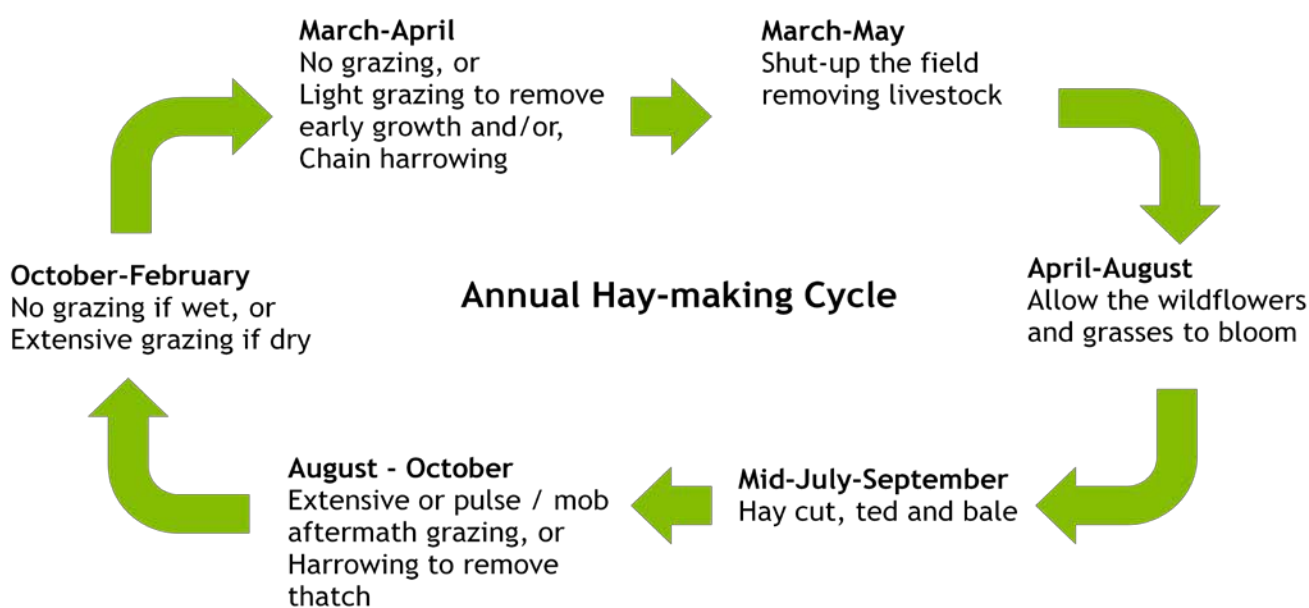
Hay meadows are grasslands that are cut for hay in July-September, and usually afterwards grazed. If the winter has been relatively warm and dry, the meadow could be lightly grazed in February with 1.5-3 Livestock Units (LU) per hectare to remove any early growth that could swamp wildflowers later in the year (see section on Livestock Units at the end of this guide).

The annual management cycle begins in March with the meadows being 'shut-up', which means excluding the livestock. Depending on the [type of meadow](#), successions of [wildflowers](#) will bloom throughout the spring and early summer.

April sees cowslips and dandelions bloom, with cuckoo-flower and snake's-head fritillary in damper meadows; May is the turn for meadow buttercup in damp meadows and bulbous buttercup in dry meadows; June is the beginning of the main flowering period with many of the legumes, such as bird's-foot trefoil, common vetch and bush vetch starting the proceedings being followed by wood crane's-bill, oxeye daisy and common knapweed in July; and into August with devil's-bit scabious. All of these wildflowers rely on the ability to be able to bloom and set seed.

Hay is usually cut in July to September depending on the type of wildflowers present and the weather over this period. Changing between earlier cuts (usually after 15<sup>th</sup> July) to later cuts (in late August) is beneficial for a hay meadow, rather than cutting at the same time each year. Leaving unmown strips along the edges of fields provide a food resource for insects, especially butterflies and bumblebees. These margins and plots could be swapped around each year so that they do not become swamped with more competitive grasses and the wildflowers are maintained along the edges.

The hay is mown, usually with a forage harvester, and laid in rows to dry. It is 'tedded', meaning turned, at least once a day to dry the crop. This also has the advantage of loosening any seed that still remains in the





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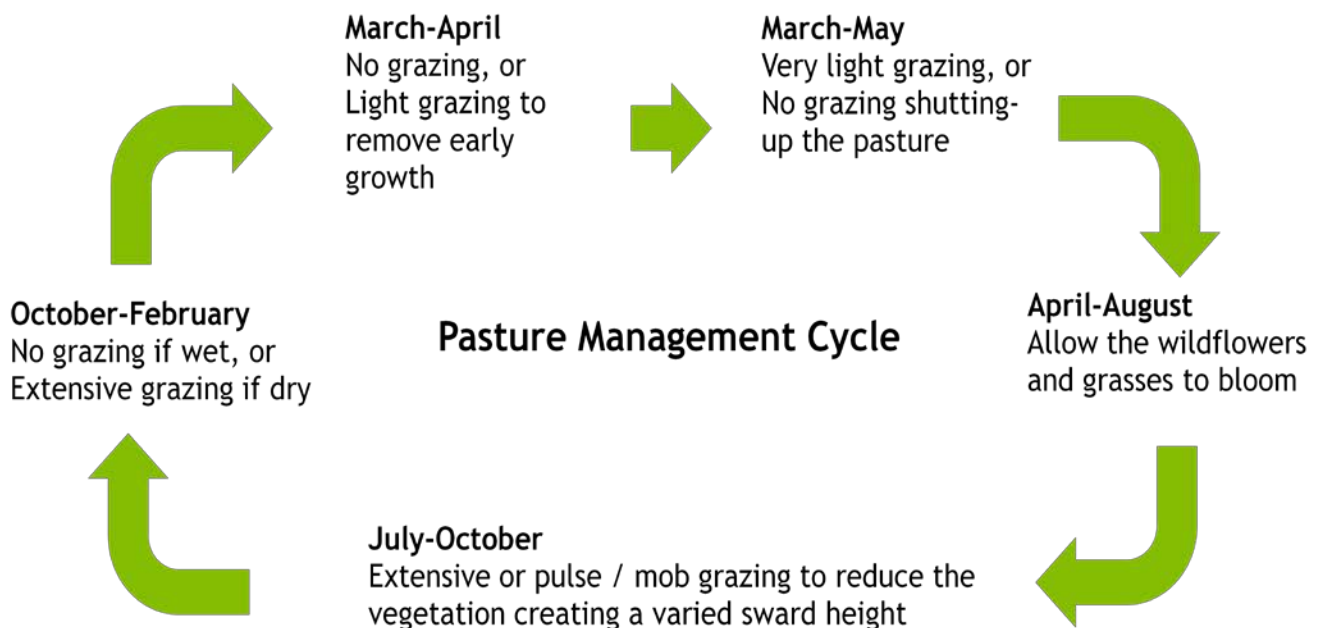
flower heads, particularly yellow rattle, so that it falls out onto the ground. When the hay is dry, which is usually after 3-5 days, and once any dew has dried in the sun, it is bailed and taken away for storage and use over the winter. There are several types of bails that you may see; round bales, large rectangular bales and small rectangular bales. Usually hay is not wrapped, but if the weather is damp during the cut or when it is drying haylage may be made instead of hay, and this is usually wrapped in plastic so that the grass can slightly ferment.

A few weeks after the hay cut and bailing, the grasslands may be aftermath grazed. This is the process of grazing the late summer growth with livestock. There are two benefits of aftermath grazing, firstly, the livestock breakup any matted vegetation and mosses and push seeds onto the soil helping them to germinate and secondly it reduces the grass growth before the wetter autumn and winter weather, allowing light to get to the ground and aiding seed germination. The types of animals and levels of grazing vary for each type of grassland and is estimated at 1-2.25 LU/Ha. Grazing may be extensive with around 1-1.5 LU/Ha (a low number of livestock may be allowed to graze for a longer period of time) or pulse or mob grazing may be used with 1.5-2.25 LU/Ha (a short intensive burst of grazing before removing the livestock). The aim is to reduce the height of the vegetation

to 2-10 cm before winter but without causing poaching. Poaching is where cattle, ponies and sheep leave pock-marks with their hooves in grassland, particularly after wet weather. Small amounts of this are beneficial as it creates a little bare ground, but large areas of poaching denude vegetation and can cause damage, particularly compaction which can increase weeds, such as docks. Livestock should be removed from the field if there is very wet weather or if poaching in gateways or along fence lines starts to become apparent.

If grazing cannot be undertaken on a hay meadow then over-time, a mat of vegetation will build-up over the soil surface, called thatch. Mechanical removal of thatch using chain and tine harrows to drag the material out of the grass is necessary to enable wildflowers and grasses to set seed. The thatch should be removed from the field so that it does not decompose adding nutrients back into the soil as this will affect the growth of wildflowers and grasses. Harrowing could either be undertaken in the autumn after livestock have been removed, and especially in damper fields, or in late winter or early spring in drier fields.

For more information on hay meadow management see [chapter 6 of the Lowland Grassland Management Handbook](#).



## Pasture Management

Pastures are grasslands that are grazed for most or all of the year. Examples of habitats that are managed as pasture include calcareous grasslands and culm or rhôs pasture which is also known as purple moor-grass and rush pasture. Marshy and rough grassland, which is too wet or rough for vehicular access for most of the year, may also be managed as pasture.

Livestock may be removed from the pasture for the early months of the year, especially if the ground gets very wet, to avoid poaching damaging the grassland. Light grazing is usually started in March, possibly at a grazing pressure of 0.4 LU/Ha. This extensive grazing is either continued at a very low-level throughout the spring and early summer or all of the livestock are removed to allow the flowers to bloom.

[Different flowers](#) will bloom in different [types of grassland](#). For example, coastal grasslands begin with a flush of sheep's-bit and thrift early in the year, whereas acid grasslands

have sorrel, tormentil and wavy hair-grass. Marshy grassland, particularly culm or rhôs pasture has a wide variety of flowers including ragged-robin, saw-wort and sneezewort, with the most well-known late-flowering plant being devil's-bit scabious which is the food plant of the rare marsh fritillary butterfly. Calcareous grassland is the richest of all pastures, with plants such as thyme, salad burnet, mouse-ear hawkweed, common rockrose, greater knapweed, milkwort and small scabious.

The field may be shut-up for a period of 8-10 weeks in the summer to allow plants to flower before grazing is reintroduced. Grazing levels may be higher in this later period of the year in order to remove the vegetation and create a varied sward height. Generally 0.4-1 LU/Ha is recommended but each type of grassland is different and may require different levels of grazing each year depending on weather conditions. Extensive and/or mob grazing can be undertaken, especially if the grassland is broken into different fields or includes different types of grassland.



Where mixed grazing is used, it is recommended that 30% of the livestock units should be cattle and 15% of the units should be sheep over a two year period. If different types of stock are being grazed each year, 60% of units should be cattle or 30% of units should be sheep in the first year, and the alternative type of livestock the following year. The remaining livestock units can be made-up of any of the other types of grazing animal.

Grazing of marshy grassland is recommended at a level below 0.75 LU/Ha to avoid poaching. In rough pasture used by breeding birds, livestock units should be limited to 0.4-1 LU/Ha between 31<sup>st</sup> March and 20<sup>th</sup> June to avoid trampling nests.

Livestock may be removed later in the year when the weather is wetter to avoid poaching. Other management such as burning (called swaling) may also be undertaken, particularly on culm and rhôs pasture where it can be used to remove the build-up of dead leaves and used to regenerate spring growth.

For more information on pasture management see [chapter 5 of the Lowland Meadow Management Handbook](#).

## Livestock Units (LU)

Each livestock animal is given a grazing unit. This is a measure of grazing pressure allowing stocking rate comparison between types of livestock. The number of livestock units per hectare to achieve different types of management has been worked out to give a guide for the number of animals required to fulfil the grazing requirements.

Animal	Livestock Unit (LU)
Dairy cow	1.00
Beef cow (with/without calf under 6 months)	1.00
Cattle over 2 years old	0.70
Cattle 6 months - 2 years	0.60
Lowland ewe (with/without lamb)	0.12
Hill ewe (with/without lamb)	0.08
Ram and teg over 6 months	0.15
Ewe follower or store lamb	0.08
Horse	1.00
Pony	0.80

These values are for medium-sized breeds. Large breeds will have approximately 20% higher livestock unit values and small breeds will be approximately 20% lower for each category. Other grazing ruminants, such as deer or camelids, are allocated a livestock unit value in proportion to their live weight, i.e. 60 kg animal is approximately 0.1 LU.

